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THE VERTICAL STRUCTURE OF MAJOR METEOROLOGICAL FEATURES ON JUPITER:
THE GREAT RED SPOT AND WHITE OVALS BC AND DE

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Multi-spectral imagery of **Jupiter's Great Red Spot** (GRS) and two **White Ovals** acquired by the **Galileo/NIMS** are used to constrain the spatial variability of the **vertical aerosol structure** and the distribution of **ammonia** in and around these most-prominent **anti-cyclonic** features. All three features exhibit a high-altitude core spanning about 3/4 of their visual size when viewed with moderate absorption wavelengths, indicating a bulk elliptical, "wedding cake" shape in their overall three-dimensional cloud structure. A distinctive spiral pattern within the GRS core is seen in moderate methane and hydrogen absorption bandpasses. This pattern - which has been modelled to show a 2 km variation in cloudtop pressure within the GRS - is inconsistent with a different spiral-shaped pattern observed in ammonia-sensitive wavelengths, thus indicating spatial variability not only in the column abundance of ammonia within the GRS, but in its mixing ratio as well.

White Ovals BC and DE were observed in February 1997, just a year before their unusual merger into a single feature. At the time of these observations, the centers of the two anti-cyclones were ~16 degrees apart, separated by a complex cyclonic feature which exhibited unusual spatial variability in its appearance in images acquired at ammonia-sensitive wavelengths. In particular, the northern half of this feature has the largest ammonia column abundance seen within the environs around the white ovals, indicating unusual variability in either cloud structure/altitude and/or ammonia humidity within the cyclone.

planetary atmospheres